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Debating economic performance aspects in the context of sustainability assessments

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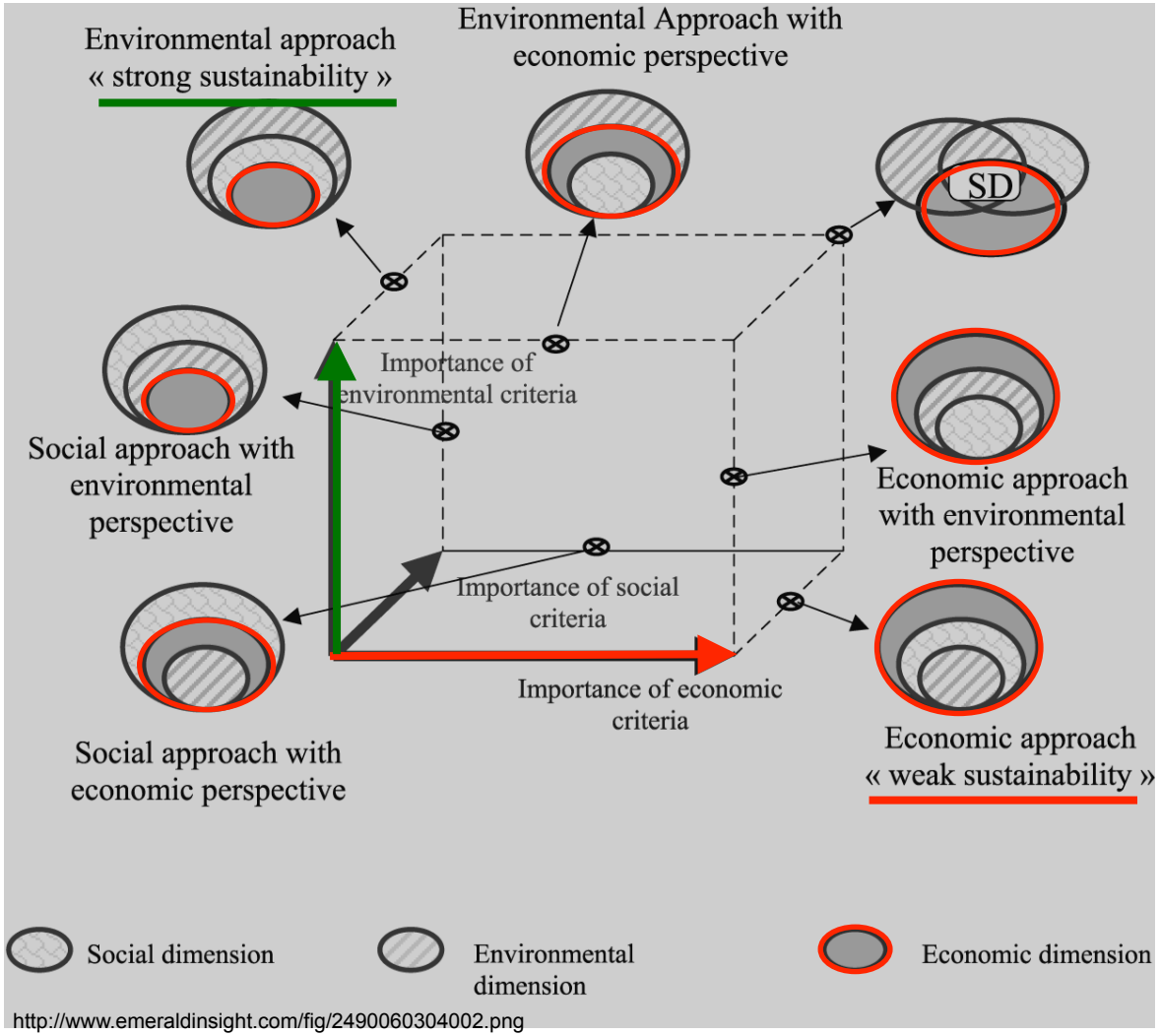
http://designbuildsource.com.au/green-construction-lifeline-economy

http://sportconflict.org/wp-content/uploads/2013/05/assessment-cycle.jpg

Background and motivation

- A complete assessment of the sustainability of buildings requires the consideration of economic performance.
- There are differences of opinion and uncertainties regarding the selection and application of criteria and indicators in the area of the economic dimension of sustainability.
- International and European standards for the assessment of the economic performance are still in development or discussion stage.

Importance of economic dimension



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The economic dimension is an important aspect of the guiding principles for sustainable development.

There are differing opinions regarding the **importance of the economic dimension in relation to the environmental dimension** (strong versus weak sustainability).

The general aim is to treat all 3 dimensions equally.

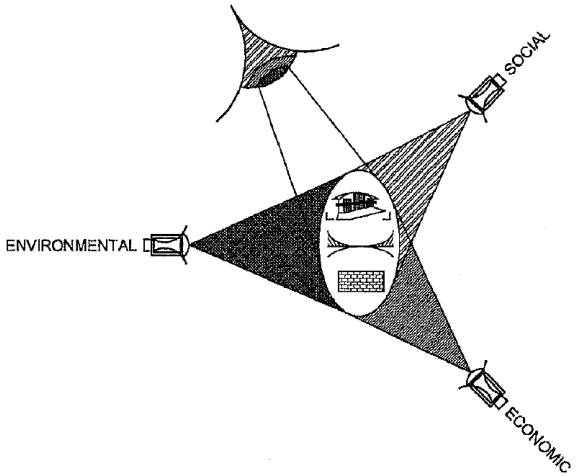
Selected questions

- Which overall **areas of protection / issues of concern / areas of concern** lend themselves for deducing economic performance requirements ?
- What is an **appropriate perspective** for assessing economic performance aspects ?
- How it is possible to take into account the perspectives and **interests of current and future generations** ?
- What are **appropriate criteria / indicators** ?

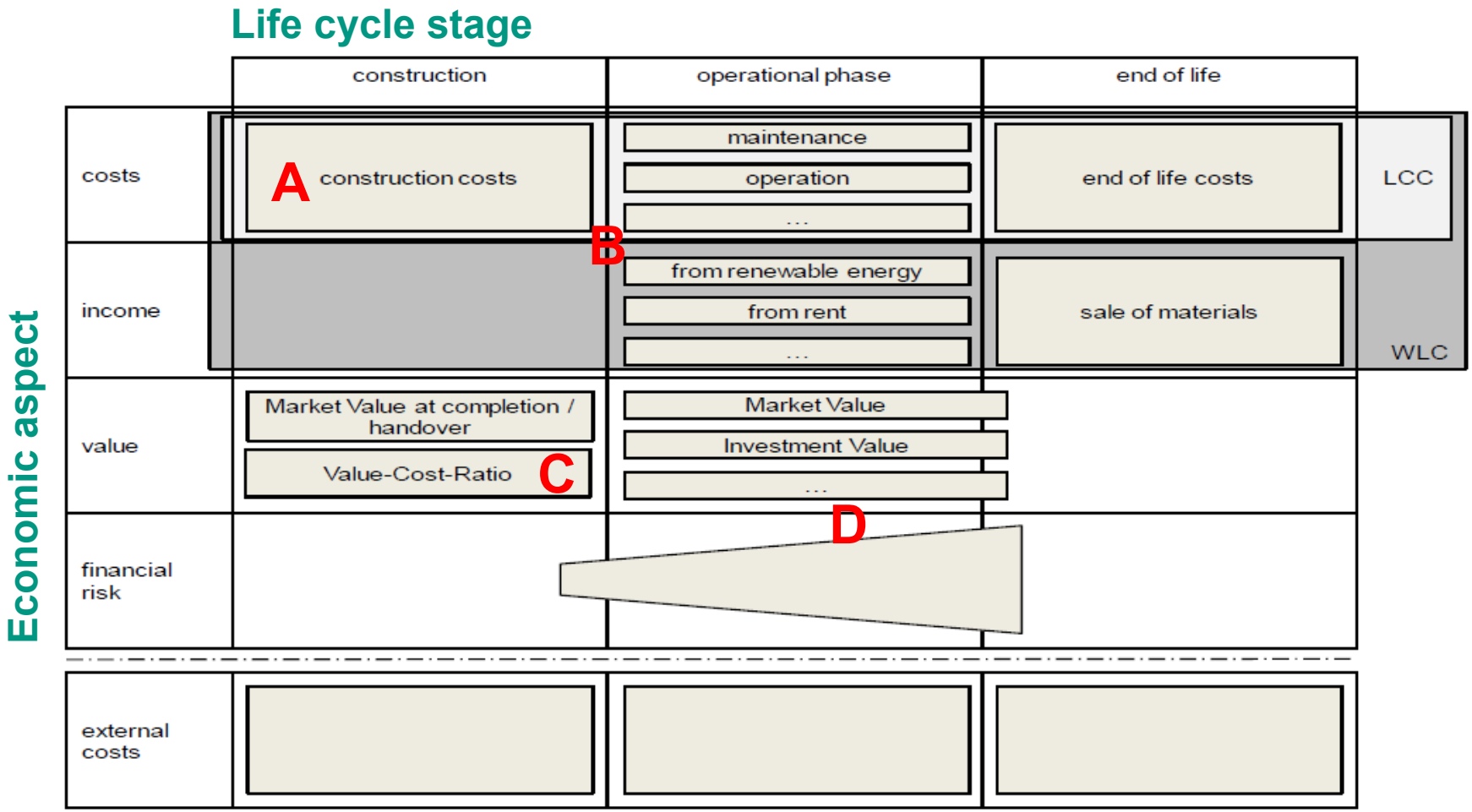
ISO 15392 (2008) General principles: Areas of concern

„… The consideration of economic aspects is closely linked to the areas of concern „**asset value**“ and „**economic resources**“. Depending on the position and the viewpoint of the interested parties, the focus can be placed on different economic aspects, e.g. Investment, cash flow, market value, profitability, economic legacy, etc.

These different viewpoints and interests are taken into account when selecting and applying appropriate indicators and they are inherently linked to the **development of the property values** and **life cycle costs**.”

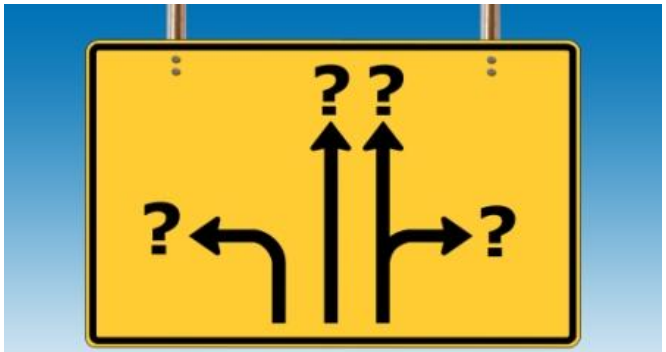


Overall concept and system of indicators

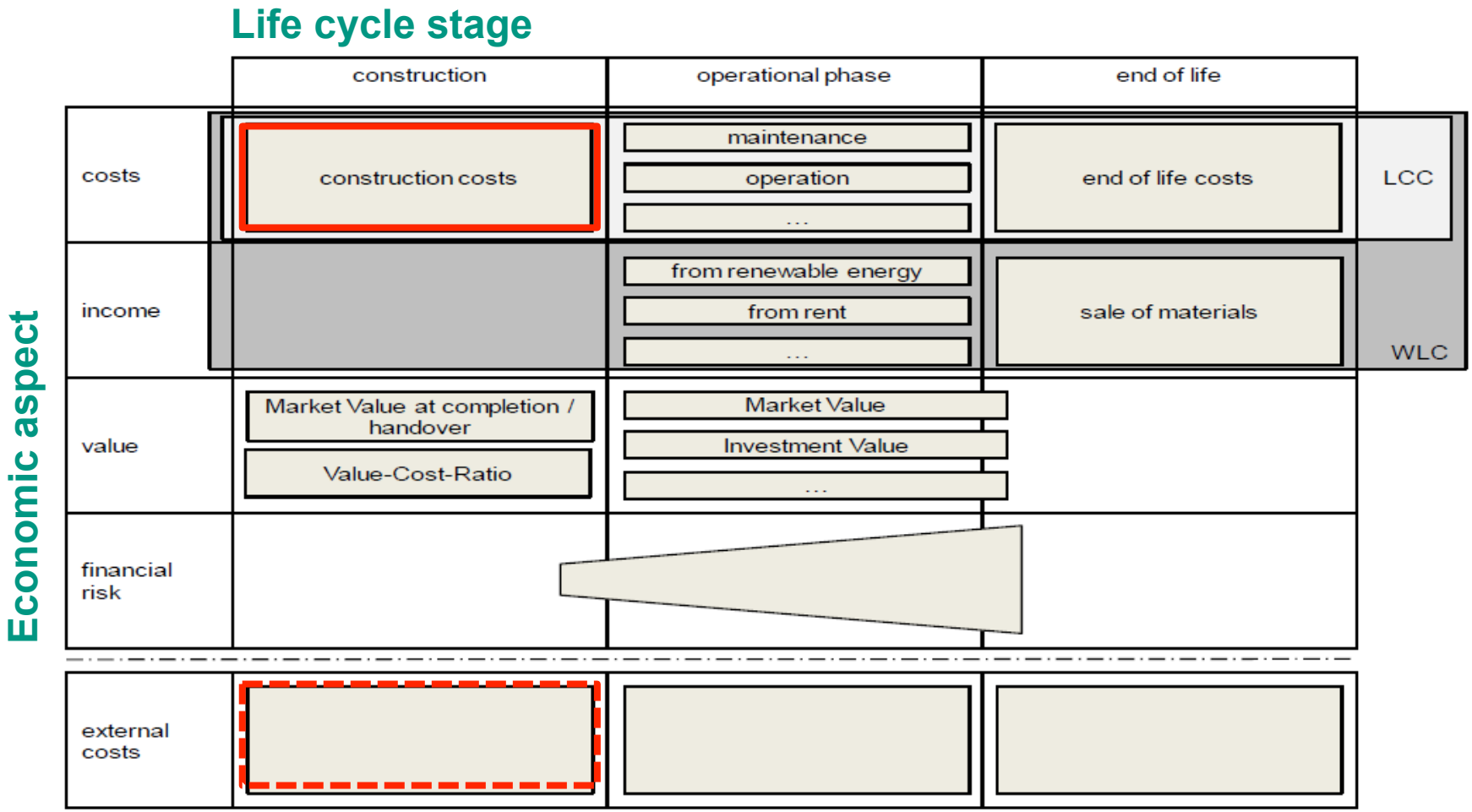


Discussion of possible assessment criteria

- **A**: construction / investment cost
- **B**: life cycle cost
- **C**: cost-value ratio
- **D**: long-term stability of value / financial risk



Indicator A “ Construction / investment cost”



Indicator A “ Construction / investment cost”

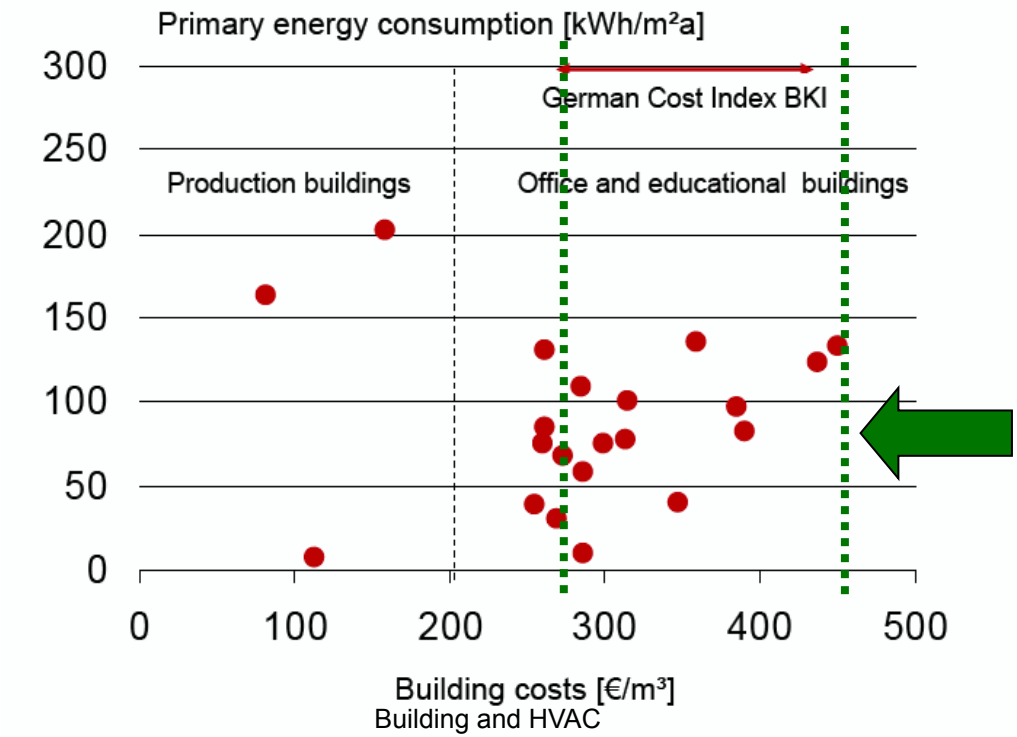
Discussion

- **Transparency** of characteristics and **comparability** between them, as well as between characteristics and benchmarks must be guaranteed – see checklist
- A) One approach is to limit the **allowable additional costs** (e.g.. max. 10%) for sustainable buildings.
- B) Alternatively, the adherence to a cost framework/ **budget** can be required, audited and evaluated.
- It is recommended the construction costs to be specified as detailed as possible stating always the information from the checklist **as additional information.**
- The cases A) and B) are maybe suitable for **additional requirements in assessment systems**

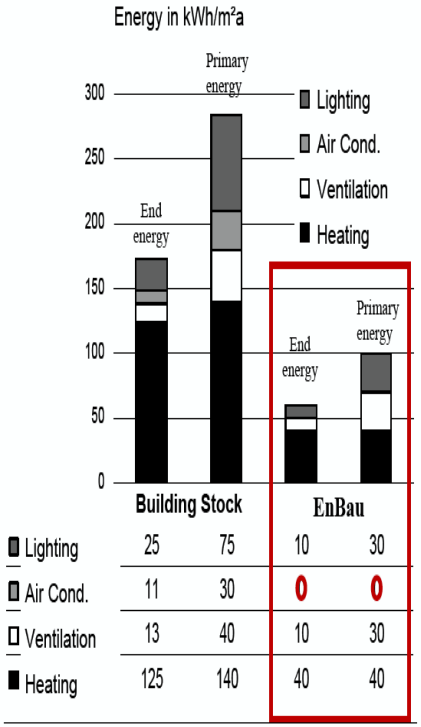
Checklist

- *Considered construction costs*
- *Reference year of the costs*
- *Treatment of VAT*
- *Price level of the area*
- *Treatment of planning costs*
- *Treatment of land costs*
- *Reference unit*
- *Source of benchmarks*

Compliance with financial budget is possible



Source: SolarBau:Monitor

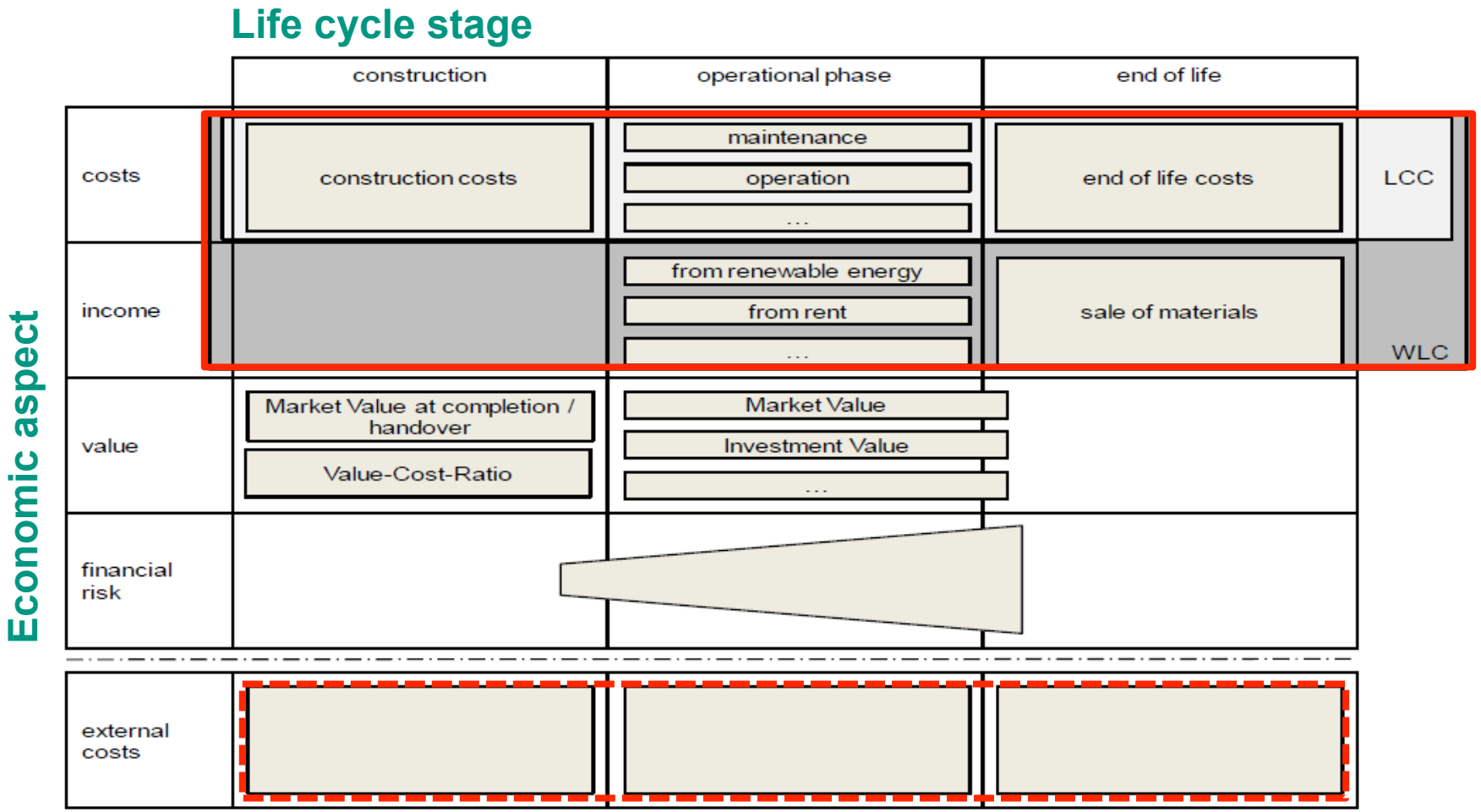


	Building Stock		EnBau	
	End energy	Primary energy	End energy	Primary energy
Lighting	25	75	10	30
Air Cond.	11	30	0	0
Ventilation	13	40	10	30
Heating	125	140	40	40

Source: ENOB:Monitor

Super energy efficient buildings can be realised without additional investment cost. Empirical values of **0 % - 5 %** can be found in literature.

Indicator B “ LCC / WLC – selected costs”



Indicator B " LCC / WLC – selected costs"

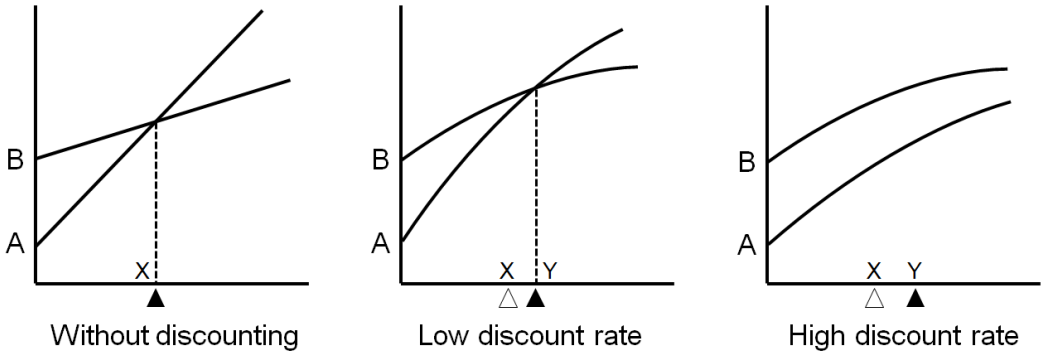
Discussion

- The use of the criterion **"life cycle costs"** is specified by the current **international and European standardization.**
- ongoing debate about the advantages and disadvantages of **LCC or WLC approach** – hybrid forms are currently used among others: for example the consideration of incomes from the sale of solar power as negative costs
- The difference between the calculation of life cycle costs from a "**neutral perspective**" and the calculation of the economic efficiency from an "**actor-specific perspective**" must be explained.
- strong influence of the selection of the **discount rate**, as well as the escalation rate for the energy prices
- Transparency of characteristics and comparability between them, as well as between characteristics and benchmarks must be guaranteed – see checklist

Checklist

- *type of included cost categories*
- *scope of included cost categories*
- *time frame/reference study period*
- *applied discount rate*
- *assumed inflation rates*
- *price / cost level*
- *assumed scenarios (maintenan.)*
- *Treatment of VAT*
- *Reference unit*
- *Source of Benchmarks*
- *…*

The impact of discount rate



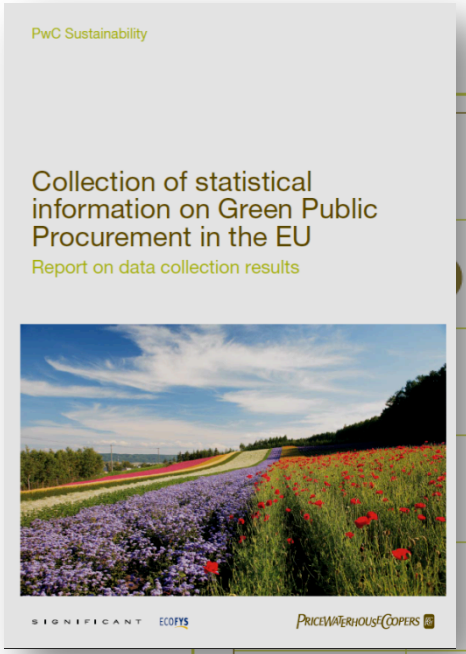
The selection of the discount rate has an important influence on the calculation of life cycle costs and the profitability of individual alternatives

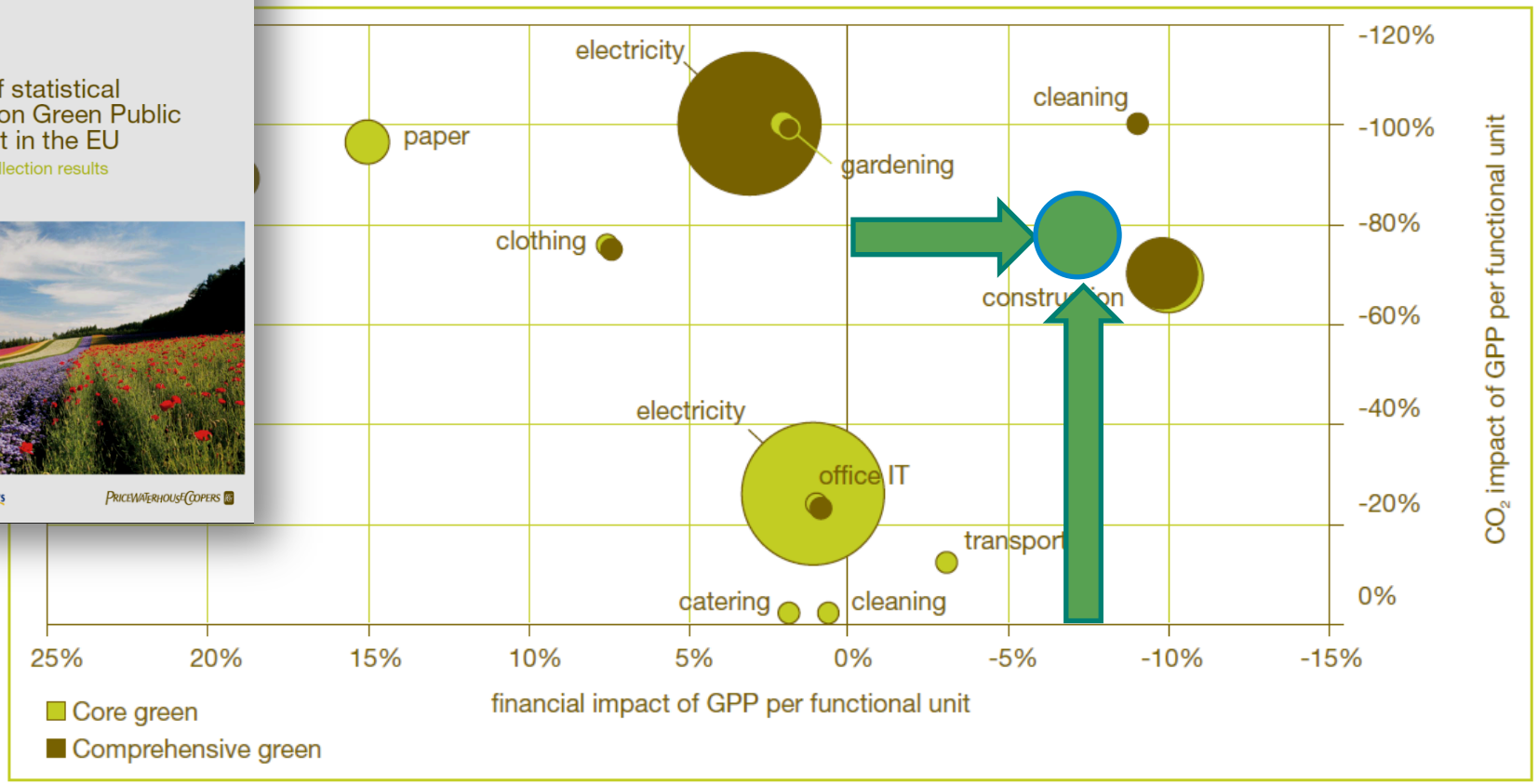
(vgl. Ellingham, Fawcett, 2006)

For the selection of the discount rate there are among others the following possibilities:

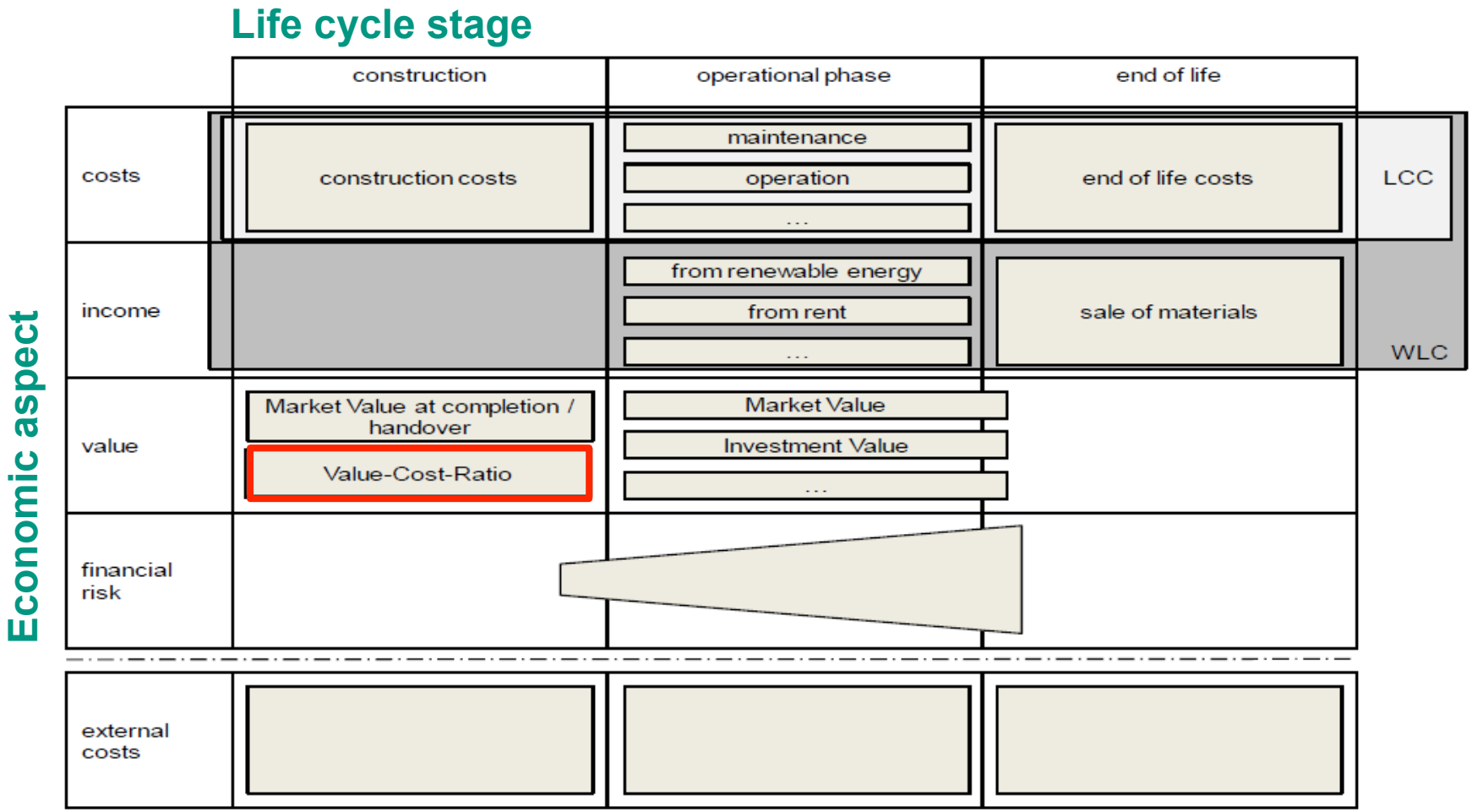
- *0% - 2 %* *Consideration of interests of future generations*
- *3 %* *Convention within the EU*
- *X %* *Picture of the market situation or the risk*

Environmental and economic targets





Indicator C “ value – cost ratio”



Indicator C “ value – cost ratio”

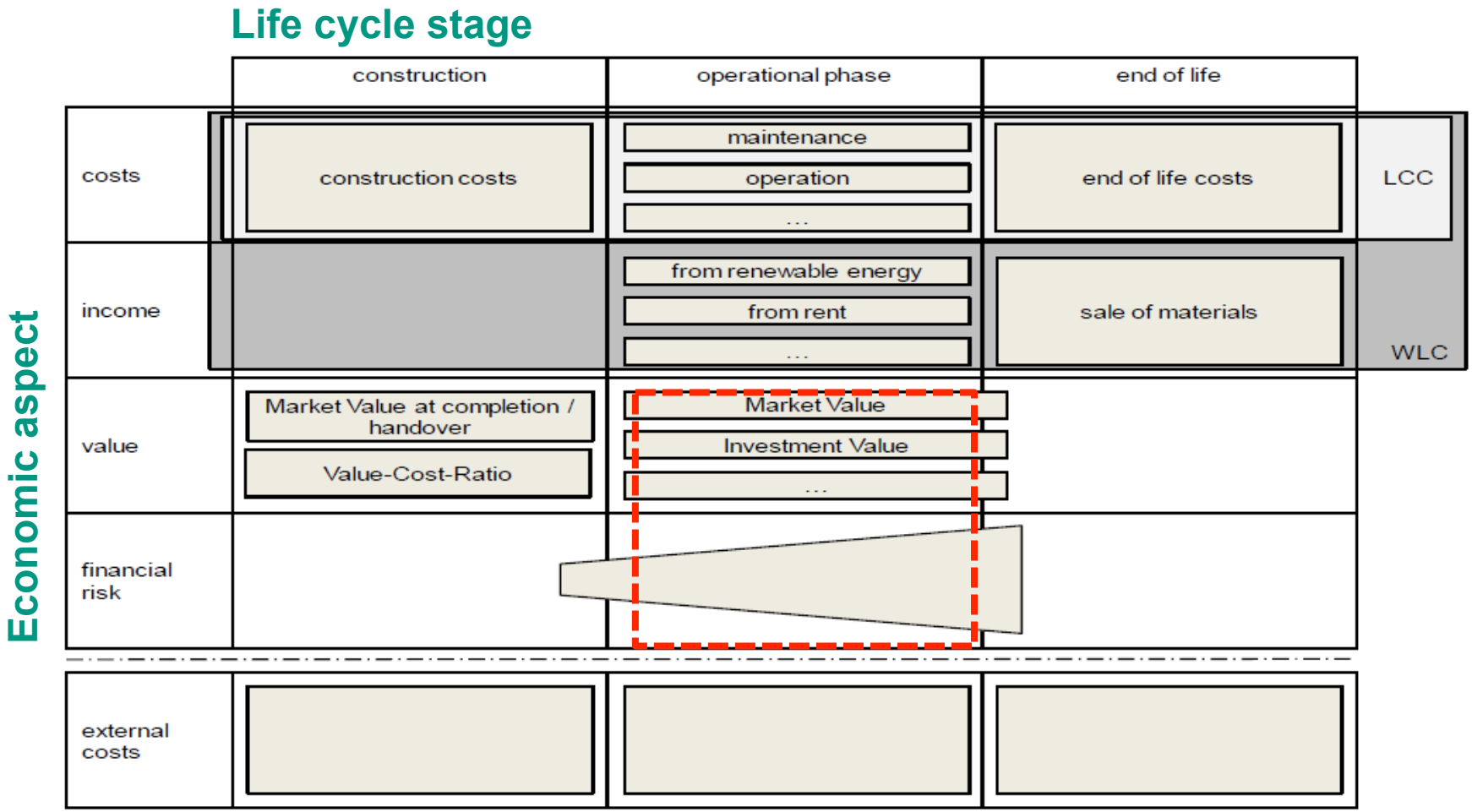
Discussion

- A (new) approach is to evaluate the "intrinsic value" of the investment. The **investment costs are compared with the economic value** (preferably determined using the income approach) at the time of completion/handover/commissioning
- This approach supports the analysis of the “**short-term stability of the economic value**”.

Checklist

- *Way of determining the investment costs*
- *Methods of valuation*
- *…*

Indicator D “ value stability/development & risk”



Indicator D “ value stability/development & risk”

Discussion

- In the analysis of the contribution of the building to the **stability and potential increase in the economic value** as well as to the reduction of the financial risk a long-term perspective is taken.
- **The long-term perspective** is of high importance for the assessment of sustainability – the preservation of the economic value is a protection target (area of protection).
- So far **consequential/ proxy indicators** are preferably used, as e.g. Flexibility, adaptability, durability
- The Authors are currently developing an approach to estimate the contribution of the building to the medium/long-term stability of the economic value.

Requirements

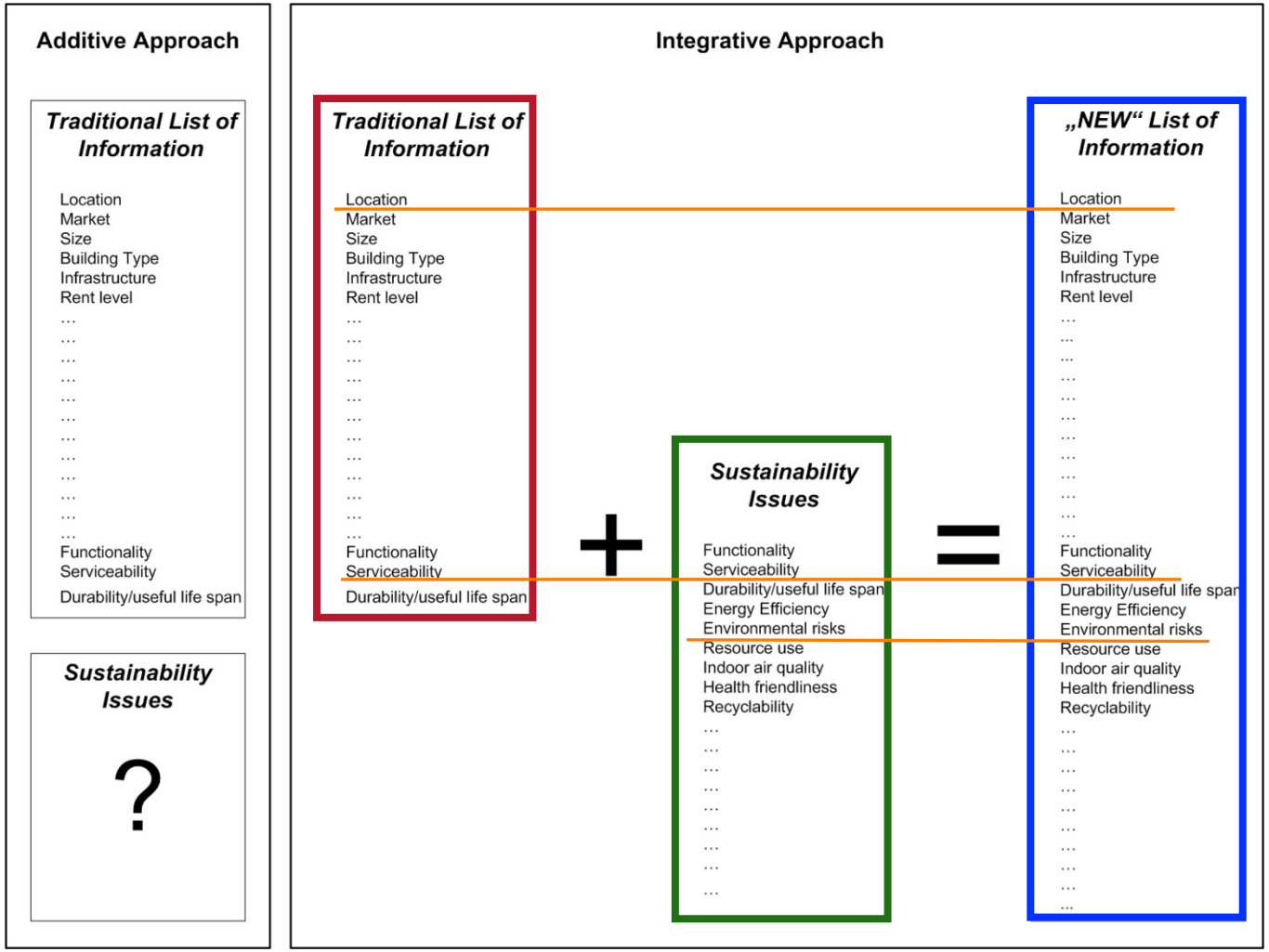
- *Integration of sustainability aspects into the valuation*
- *Development of methods to predict the development of value, considering also the sustainability aspects*
- *Integration of sustainability aspects into the risk and property analysis (e.g. THEGoVA)*

“Greening” the valuation methods

Empirical evidence (selected examples)

Study/Authors	*Country*	*Property Type*	*Sustainable Credentials*	*Observed impact on*	*+/-*	*Magnitude*
Pivo and Fischer, 2011	USA	Office, retail, industrial and apartment properties	Walkability (distance to educational, retail, food, recreational and entertainment destinations), measured as a Walk Score from 0 to 100	Market Value (office, retail)	+	0.9 % for each unit increase in Walk Score
				Market Value (apartment)	+	0.1 % for each unit increase in Walk Score
				Net Operating Income (office, retail)	+	0.7 % for each unit increase in Walk Score
				Income Returns / Cap Rates	-	0.007 % for each unit increase in Walk Score
Salvi et. al, 2008	Switzerland	Residential Homes	MINERGIE Label	Selling Price	+	7 %
		Residential Flats		Selling Price	+	3.5 %
Salvi et. al, 2010	Switzerland	Residential Flats	MINERGIE Label	Rental Price	+	6 %
Wameling, 2010	Germany (Nienburg)	Residential Homes	Primary energy demand per m² and year (kWh/m²a)	Selling Price	+	Ca. 1,40 €/m² per reduced kWh/m²a
Wiley, Benefield and Johnson, 2008	USA	Office Buildings	LEED, Energy Star	Rental Price	+	7 % - 17 %
				Occupancy Rates	+	10 % - 18 %
Yoshida and Sugiura, 2010	Japan (Tokyo)	Large residential condominiums	Tokyo Green Labeling System	Selling Price	-	6 % - 11 %

NUWEL: the “long-list”-appoach



NUWEL: integration of sustainability aspects

Discounted Cash Flow (DCF)

- Changes in market participants' preferences
- Lower share of operating costs for tenants
- "Green lease"

- Ease of conducting maintenance and servicing activities
- Lower repair costs

$$Market\ Value = \sum_{t=1}^{n} (GIe - OETz - ME - OE + OI)_t \times \frac{1}{(1+r_{disc})^t} + \frac{(GIe_n - OETz_n)}{(r_i + r_p - g + d)} \times \frac{1}{(1+r_{disc})^n}$$

- Improved marketability
- Shorter vacancy periods

- Lower expenses for modernisation / revitalisation

- More stable cash flow
- Improved marketability
- Lower sales risk
- Image / Reputation gains
- Potential for increases in rents

- Longer useful economic lifespans
- Longer compliance with increasingly stringent environmental legislation

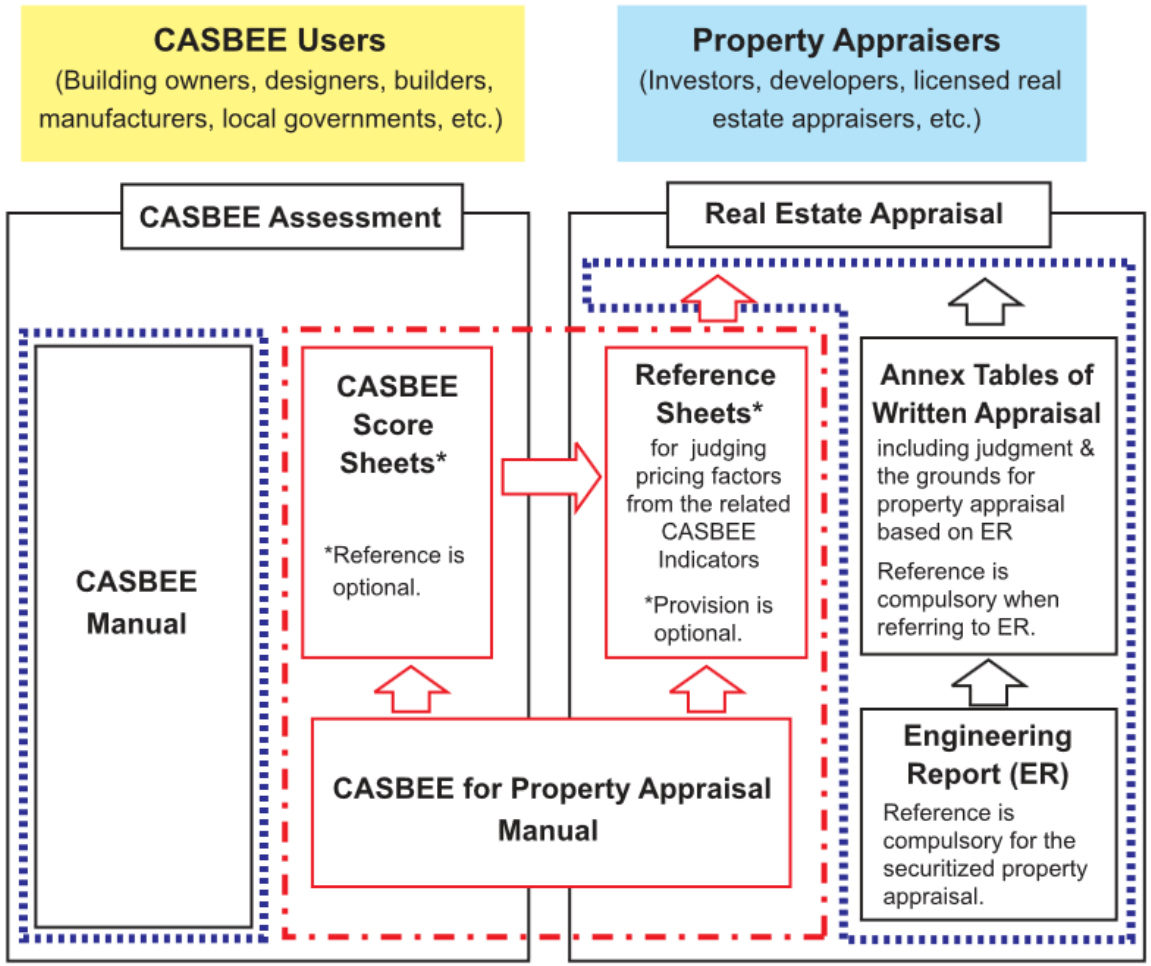
- Lower property risks (not yet explicitly taken into account in modelling of property cash flow)

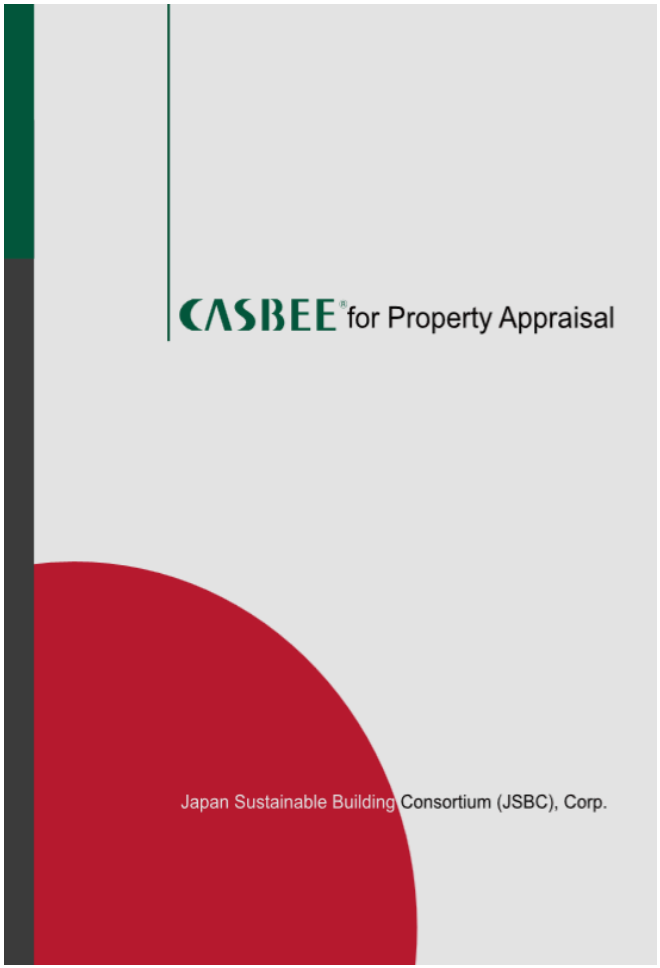
- Improved competitiveness
- Rising energy costs
- "Sustainability Hype"

Explanation:

n:	Time frame in years	$OETz_n$:	Operating expenses non-attributable to tenants in year n
GIe:	Gross rental income	r_i:	Risk-free rate
OETz:	Operating expenses non-attributable to tenants	r_p:	Risk premium
ME:	Marketing expenses	g:	Growth rate
OE:	Other expenses (e.g. modernisation, etc.)	d:	Depreciation
OI:	Other income (e.g. advertising on building facade)	$\frac{(GIe_n - OETz_n)}{(r_i + r_p - g + d)}$:	Terminal value of the building in year n
r_{disc}:	Discount rate		
GIe_n:	Gross rental income in year n		

Examples from Japan





Available information for valuers

Available information / first mandatory requirements

Title / Description	VIP 13	IP 22	VIP 13 (Australia)	EVS 2012 (Information paper on sustainability and valuation)	ImmoWertV	NUWEL	RICS Draft Guidance Note
Publisher	RICS	RICS	RICS Oceania	TEGoVA	BMVBS	CCSR	RICS
Year of Publication	2009	2011	2011	2012	2011	2011	2013 (planned)
Application: Property type	Commercial Property	Residential Property	Commercial Property	All	All	All	Commercial Property
Application: country / region	Global	UK	Australia	Europe	Germany	Germany, Austria, Switzerland	Global
Coverage of sustainability issues	broad	broad	broad (but focus on energy)	broad	Energetic quality	broad (detailed listing of issues)	broad (detailed listing of issues)
Degree of compul-sion / bindingness	informative	informative	informative	informative	mandatory	informative	recommended good practice
Character: generic requirements / detailed recommen-dations	generic	generic	detailed	generic	-	detailed	detailed
Recommendations for valuation reports	-	-	X	-	-	X	X
Recommendations on the extension of the data collection process	-	X	X	-	-	X	X

Recommendations and outlook

- The type and extend of a future consideration of **external costs** must be discussed.
- The methods of **calculating the life cycle costs** must be further developed, simplified and become more transparent.
- The further development of **valuation approaches** can lead to more accurate statements in relation to value stability.
- It is suggested the path towards the assessment of the contribution of the building to the **financial risk** to be followed.

Summary

“Green is good for asset value.”

Source: RICS, 2005, *Green Value – Green buildings, growing assets*, Published by: The Royal Institution of Chartered Surveyors

Thanks for your attention ! Vielen Dank für ihre Aufmerksamkeit !

Dêkuji za pozornost ! Dziękuję za uwagi ! Спасибо за внимание !

Köszönöm a figyelmüket !

Merci pour votre attention ! Gracias por la atencion !

Grazie per la sua attenzione! Südamlik tänu ! Liels paldies !

Tänan väga ! Labai aciu ! Faleminderit shumë ! Mange tak !

Благодаря! Efharisto' poli ! Dank u wel ! Takk fyrir ! Tusen takk !

Muito obrigado ! Mult'umesc foarte mult ! Tack så mycket !

Dakujem velmi pekne ! Hvala lepa Teşekür ederim !